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JAPANESE PATENT OFFICE

PATENT ABSTRACTS OF JAPAN

(11) Publication number: 03176053 A

(43) Date of publication of application: 31 . 07 . 91

(51) Int. Cl.

A61F 13/15

A61F 5/44

(21) Application number: 01315742

(71) Applicant: ZUIKOU:KK

(22) Date of filing: 04 . 12 . 89

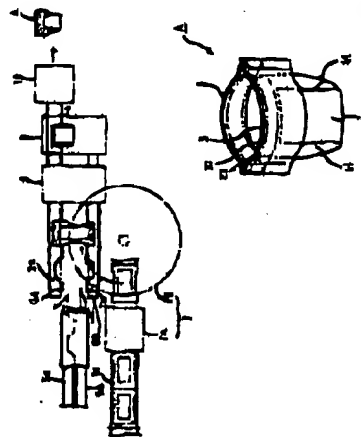
(72) Inventor: WADA TAKAO

(54) MANUFACTURE OF BRIEFS TYPE DISPOSABLE DIAPER COPYRIGHT: (C)1991,JPO&Japlo

(57) Abstract:

PURPOSE: To reduce costs by enabling an automatic large-scale production method by forming a back body wrapping part and front body wrapping sections to place a diaper main body thereon orthogonally and to bond it thereto.

CONSTITUTION: Optional stock is selected for a back body wrapping section and front body wrapping sections (2 and 3) independently of diaper body 1. In other words, the diaper body 1 is relayed to a turning transfer device 7B behind a suction conveying device 7A and the diaper body 1 is turned by 90° to be supplied to a specified position between belt bodies 2a and 3a of both body wrapping sections perpendicular thereto. Then the diaper body is conveyed to a bonding means 8 to bond it integrally with the belt bodies 2a and 3a of both body wrapping sections. Thereafter, the assembly is conveyed to a folding means 9 to be folded double and side ends of the belt bodies 2a and 2b of both the body wrapping sections are cut while being bonded by a bonding/cutting means 10.



*full translation attached
No equivs. outside JPO*

Translation of
Japanese laid open patent application number H3-176053

Japanese Patent Office (J P)
LAID OPEN PATENTS GAZETTE (A)

Laid open patent application number H3-176053

Laid open July 31, 1991

INT. Cl⁴ A 61 F 13/15
5/44

Identification code H
Internal office filing numbers 7603-4 C
6606-3B A 41 B 13/02 S
Examination request not requested
Number of claims 1
(total of 6 pages [in the Japanese])

Title of the invention Brief-type disposable diaper production
method

Patent application number H1-315742
Application date December 4, 1989

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Specification

1. Title of the invention

Brief-type disposable diaper production method

2. Scope of the patent claim

A brief-type disposable diaper production method involving

a process whereby a water-absorbent material is inserted between an outer sheet and an inner sheet to form a diaper body;

a process whereby a front waistband and a continuous back waistband having an elastic member at least at the side is formed;

a process whereby the diaper body is overlapped and adhered to both waistbands in the transverse direction;

a process whereby the diaper body is folded double and both waistbands are brought into contact; and

a process whereby the contacted waistbands are cut to prescribed dimensions and the regions near the cuts are adhered to integrate

the waist parts at the edge portions

to produce a brief-type disposable diaper from a diaper body and a single waistband.

3. Detailed description of the invention

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Field of industrial use

The present invention relates to a brief-type disposable diaper production method.

Prior art

Known technology relating to this type of brief-type disposable diaper production method is disclosed in Japanese Unexamined Patent Application Number S57-77304: "Diaper-brief and Production Method Therefor".

Problems to be overcome by the invention

The abovementioned technology is disadvantageous in that as there is a cut-out portion in order to form an opening for the wearer to insert his/her legs, it is necessary to add a process for forming the cut-out portion, which raises production costs.

Means of overcoming the abovementioned problem

The present invention overcomes the abovementioned problem of the prior art and allows the production of brief-type disposable diapers by an automated large-scale production method involving a process whereby a diaper body is formed; a process whereby a back waist part and front waist part are formed; a process whereby the diaper body is overlapped and adhered to both waist parts in the transverse direction; and a process whereby the diaper body is adhered and integrated.

Embodiment

The present invention is described in detail based on the embodiment shown in the following drawings.

Figures 4 through 6 show an example of a brief-type disposable diaper produced according to the present invention: 1

- 4 -

represents the diaper body, formed by inserting absorbent material 13 between outer sheet (for example, a water-impermeable P.E. sheet) 11 and inner sheet (for example, water permeable nonwoven cloth) 12.

2 is the back waist part and 3 is the front waist part, and the material for both waist parts 2 and 3 may be selected independently from the material for diaper body 1, although in this embodiment, the same material is used; the double layer having P.E. sheets 21 and 31 as the outside and nonwoven cloth 22 and 32 as the inside is formed, an elastic member sheet (for example, a polyurethane sheet) 23 and 33 is inserted into part thereof, so that at least the upper edge is expandable. It should be noted that it is also possible to have a single layer elastic sheet, to form a completely expandable construction. It should be noted that as waist parts 2 and 3 are preferably of an air-permeable material, it is desirable either to take the nonwoven cloth and elastic sheet, and exclude the P.E. sheet, or, when a P.E. sheet is used, to puncture a plurality of small holes therein. It is also possible to totally or partially affix the elastic member (rubber thread, rubber tape or the like) to a sheet of suitable material, to form an elastic sheet.

Moreover, the hole parts H for the insertion of the wearer's legs are dictated by the width and shape of the diaper body 1 and the width and shape of waist parts 2 and 3, and generally, the shape is such that the holes are toward the front side.

The brief-type disposable diaper production method of the

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present invention will be described below with reference to Figures 1 through 3.

Figure a shows the diaper body 1 production process: absorbent body 13 is placed on outer sheet (back sheet) 11 supplied from outer sheet roller 11a, then inner sheet (top sheet) 12, supplied from inner sheet roller 12a, is supplied thereon, to achieve a sandwich-like insertion of absorbent body 1 between outer sheet 11 and inner sheet 12; then this is transported by the first conveyor device 4 to adhering-cutting device 15, and the circumference is firmly adhered by adhering-cutting device 15, or adhered with adhesive, then cut to the required shape. It should be noted that this process is the same as known diaper production processes, and it is possible to employ a conventional production line for disposable diapers.

It should be noted that the adhering-cutting device 15 comprises two stages: first unit 15a and second unit 15b. In first unit 15a, only adhesion and the cutting of cut-away parts P proceeds, to continuously form diaper body 1, then diaper body band 1a is transported to the next process, and may be cut crosswise to the required dimensions by second unit 15b when in the vicinity of the waistbands 2,3-adhesion process.

Moreover, as there are no cut-away parts P when diaper body 1 is long, it is also possible to achieve the aims of the present invention by only adhering in first unit 15a, then cutting in second unit 15b.

There are various possible shapes for the cut-away parts P, and the shape can be selected according to the shape of the

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waistband 2,3 and the desired shape of hole parts H.

Figure 1(b) shows a waistband 2, 3 production line: elastic member sheet 23a, supplied by elastic member sheet roller 14, is cut along a continuous S-shaped cutting line in the central portion by cutting device 24 to form a pair of bands, back waistband 2a and front waistband 3a.

It should be noted that in the case of the multilayer constructions shown in Figure 3 (outer sheet (P.E. sheet) and elastic member sheet, inner sheet (nonwoven cloth) and elastic member sheet, or outer sheet and elastic member sheet-inner sheet), if elastic member sheet 23a is a band of the same width, and only part of sheet 21a, 22a is adhered, the elastic member sheet can be used effectively without cut-away parts, and holes of the desired shape can be found by selecting a suitable shape for waist part 2,3.

Figure 1(c) integrates the diaper body 1 process of Figure 1(a) and the waistband 2a, 3a process of Figure 1(b), to show the brief-type disposable diaper-forming process: the second conveying device 5a, 5b for waistbands 2a, 3a extends to become the third conveying device 6A and the force conveying device 6B.

Diaper body supply means 7 comprises suction conveying device 7A and rotation conveying device 7B, such that suction conveying device 7A for conveying the diaper body 1 that has been cut to the required dimensions is provided at the end of the first conveying device 4, after which diaper body 1 proceeds onto rotation conveying device 7B, then rotation conveying device 7B rotates the diaper body 1 through 90°, to supply diaper body 1

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transversely to a prescribed position on waistband 2a, 3a.

It should be noted that rotation conveying device 7B receives the diaper body 1 on the conveying surface of suction conveying device 7A then supplies it by rotating $1/4$ of a rotation while suction continues, then rotating the diaper body 1 that is between third conveying device 6A and fourth conveying 6B through 90° , and diaper body supply means 7 can achieve the aim by means of a suitable conveying means as follows: the adsorption surface of the diaper body is rotated through 90° according to the rotation of a suction rotation drum provided so as to be continuous with suction conveying device 7A, then the diaper body proceeds to a suction conveyor belt, whereupon it is conveyed in a transverse direction with respect to the conveying devices, thereby allowing diaper body 1 to be supplied between waistbands 2 and 3.

Diaper body 1 is then conveyed to adhesion means 8 and adhered to waistbands 2a, 3a by a suitable adhesion means such as an adhesive or heat seal.

It is then conveyed to folding means 9, and folded double by said folding means 9 to superimpose front waistband 2a and back waistband 3a.

The sides of the superimposed waistbands 2a and 2b are adhered and cut to the required shape by adhering-cutting means 10, to yield brief-type disposable diaper A.

Advantages of the invention

The present invention yields a brief-type disposable diaper by adhering and integrating a pair of waistbands and a

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diaper body and cutting to the required dimensions and so conventional diaper production lines can be used for the diaper body, the waist parts are supplied as bands and automated mass production is possible due to a belt conveying device, so the brief-type disposable diapers can be effectively produced at extremely low cost.

4. Brief description of the drawings

Figure 1 is an explanatory diagram for the brief-type disposable diaper production method of the present invention: Figure (a) shows the diaper body production process, and Figure (b) shows the waistband-integrating process.

Figure 2 is a diagram of the diaper body, and Figure 3 shows the front waist part and back waist part.

Figure 4 shows an oblique view of a brief-type disposable diaper produced according to the present invention, Figure 5 is plane view and Figure 6 is a cross-sectional view of the diaper body.

- | | |
|----|--------------------------|
| 1 | Diaper body |
| 2 | Back waist part |
| 3 | Front waist part |
| 7 | Diaper body supply means |
| 8 | Adhesion means |
| 9 | Folding means |
| 10 | Cutting means |

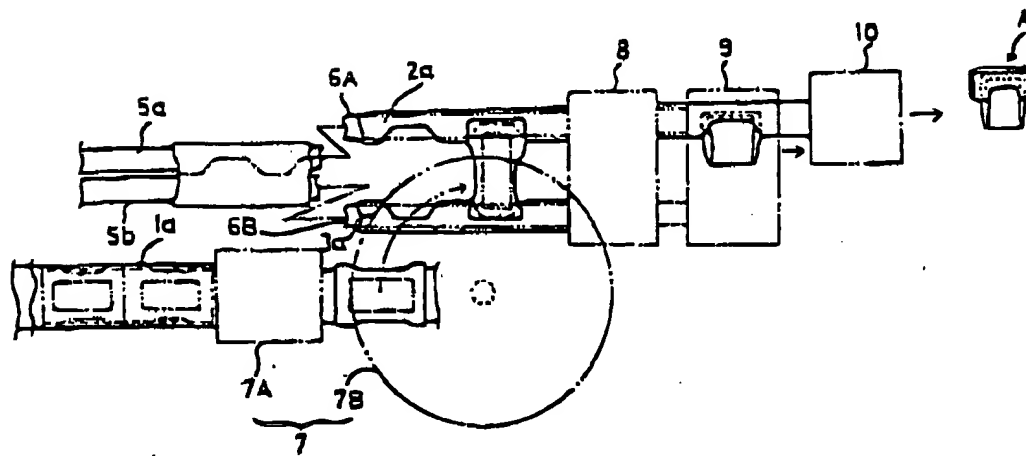
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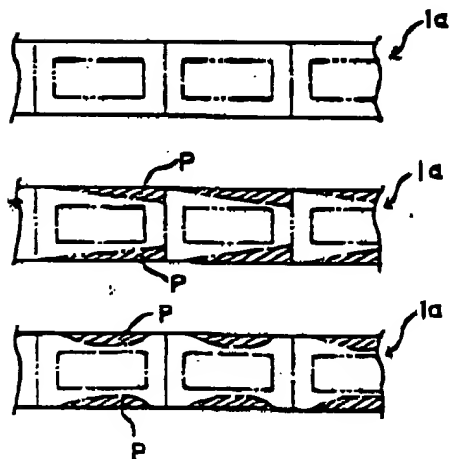
S. Okumura

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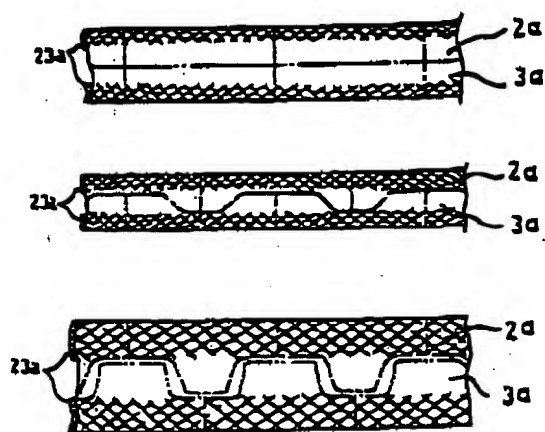
第1図(C)



第2図

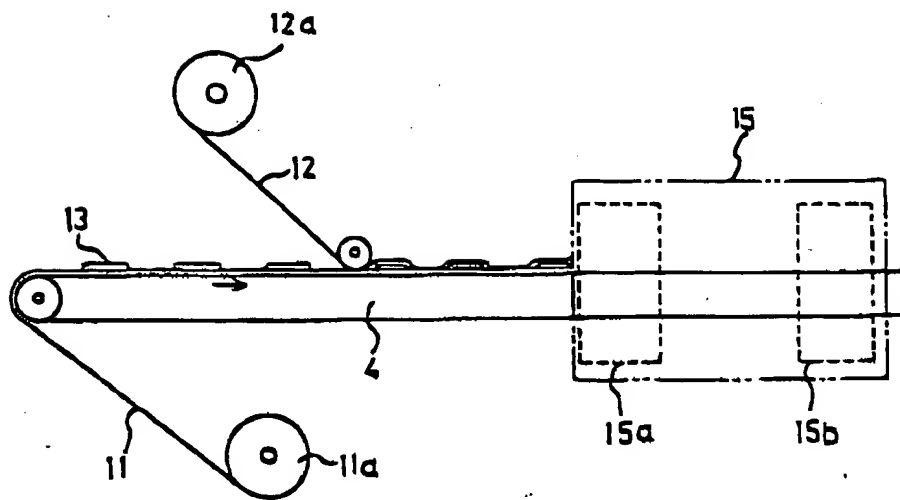


第3図

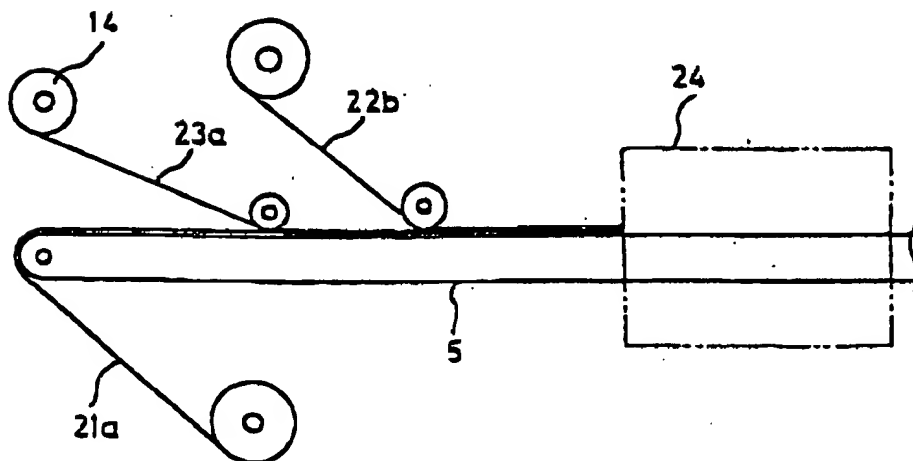


特開平3-17053(4)

第1図(a)

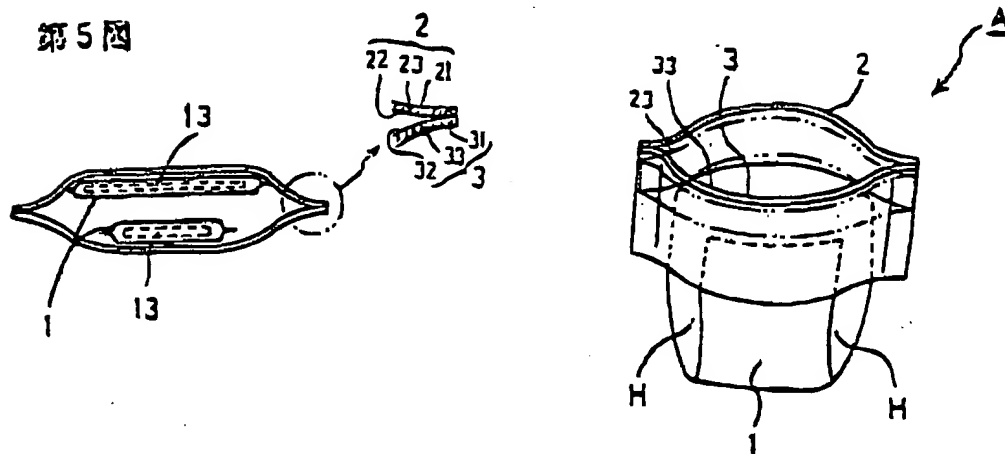


第1図(b)

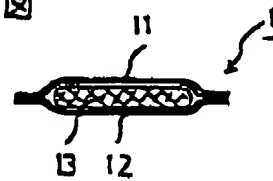


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第4図



第6図



特開平3-176053 (2)

此様い形で蓋をつを製作し、又其上面の上は同様に
金を所焼するものであり。

口 宣 德 同

以下諸節に示す五例にもとづいて、本問題を
説明する。

第4図乃至第8図は不規則により製造されたブリーフの使い捨て及びつの一例を示し、1は肩口つてはで、外装シート（例えば、非透水性シートであるP. E. シート）11と内装シート12（例えば、透水性シートである不織布）とで、縫製部13を隔ち込んで形成されている。

2 は片層異相イリ。3 は両層異相イリであり、
異相イリ部 2・3 は、おむつおむつとは相互して
は互の異相を選択するが、互換的ではおむつお
むつと両層の異相を併用し、異相を 2、3、シ
ート 21・31、両層を不能可 22・32 とする二
層構造とし、その一層に導電部シート（例えば、
ポリクレタンシート）23・33 を組み込み、少
なくとも上層部においては加硫性のある構造とし
た。なお、導電部シートは単層構造とし全面積

シート１ととの間に組み込んだ後、両者の断面
を１より内径第１部を第４により移動し、両者
の断面を１より周縁部を第３とし、また内径第
二部で角形して所定長さに切断する。なお、全長は
おむつの製造工程と同様であり、段々の地い厚で
おむつの製造ラインを適用することが出来る。

一方、後者明確測定15巻、第1ユニット15巻と第2ユニット15巻との2段構成とし、第1ユニット15巻では後者とともに切斷成分Pの明確のみを行なうて、道徳性におおつ本件1を形成して、並びつ本件第2巻1を改工型に送り込み、同型第2巻2・3との後者工型の送付において、第2ユニット15巻により後者方に用定すは感に明確してもよい。

また、組むべき部材の形成を同方向性とする場合は、明確な分岐が起きないので、第1ユニット150では周角のみを行ない、第2ユニット150で明確することにより区別を達成することが出来る。

また、明細図付 P の別表は、同明細図を添付して送付する。

に押縮むのある構造としてもよいことは勿論である。なお、両側面は図2・3は、通気性のある材料が望ましいので、P、E、シートを用いて不織布と弾性多孔シートとするか、P、E、シートを用いる場合には多数の小孔を形成させることが望ましい。また、通気性を高めるために、ゴム系、ゴムフーミングの弾性多孔質材料は有効に利用して弾性多孔シートを形成し、これに炭素繊維等の足を入れるなどの改良を行う。又、なつておほいぬりおよび筋状の溝状とし、両側面は図2・3の形状より筋状の溝状により構成され、一般的に側面に沿って開口する形になる。

次に、第1回力要第3節を参照して、本発明によ
るブリーフ型紙の図で右ひうの製造方法を説明
する。

▲例は、おむつをほりの製造工程を示し、外装シートロール11aより供給される外装シート（バックシート）11上に、電着紙13を配置し、その上に、内装シートロール12aより供給される内装シート（トップシート）12を供給して、アンディッチ法に電着紙1を外装シート11と同

2・3の形を弄上げ所とする開口部Hの形は等により用々のものが通入されるものである。

第1巻の8巻は、同調調り部を5体2・3の型通ラインを采し、同調調りシートロー14より採られた押込部シート23のを切斷部を24により中や左及び右の直線3は切斷部で切斷して一片の筒状部を形成し、一方を同調調り部は5体2・3とし他方を同調調り部を5体3・4とする。

なお、第三項に示すごとく、外面シート（P、E、シート）と内面紙材シート、内面シート（不織布）と内面紙材シート、または外面シートと内面紙材シート内面シートとの多層構造とする場合には、内面紙材シート23aを同一巾の幅に折り紙とし、シート21a・22aの一端にのみ内面紙材シート23aを局部的に切断除去を要することなく使用ができ、且つ図4の図2・3の形成を任意に選択し、所望の形状の折り紙を形成することができて好都合である。

第1項のc項は、a項のかわりにbと、b項のかわりにaとを、一般化して、

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ブリーフ形態を用いておむつとする工程を示し、**Ｂ**図の両面が布帛又は**２a・３a**の第２層に裏面**５a・５b**を縫合して開口部を形成する**Ａ**面及び第４層に裏面**６b**とする。

第1製造装置4の吐出側に、所定圧に調整さ
れたおひつ本体1を搬送するための吸引搬送装置
7Aを設け、その吐出の吐出圧調整7Bにおひ
つ本体1を引寄せ、吐出圧調整7Bでおひつ本
体1を30度傾角で密封回り部形成体2a・3
a間の所定位置に位置調整しておひつ本体1を供給
して、おひつ本体供給手段7を用成する。

なお、起動時送風機7Bは吸引送風機7Aの
送風部上のおむつ本部1を全行取り、吸引しつづ
1/4回転して第3送風機8Aと第4送風機
8Bとの間におむつ本部1を90度以内させて換
気するものであるが、吸引送風機7Aに連続し
て吸引吐向ドラムを設けてドラムの回転に伴っ
ておむつ本部の吸着面を回転させて90度以内をせ
たのち吸引排送ベルトに引寄せ吸引排送ベルトと
る送風機と風送方向に排送しても、事故おむつ

作で供給されることで、ベルト輸送装置による工
 場の設置方法とすることができ、ゆがひの増
 コストでブリーフ引取り面とひびきを削減する
 効果を得るものである。

4. 問題の解決と結果

第一圖は本発明によるブリーフ用紙の構成であつた製造方法を示す説明図で、A部は布製の成形工程、B部は鋼板工部との一体化工程をそれぞれ示すものである。

第2圖はあひつ不飽和の反成図、第3圖は可飽和
成り系および可飽和成り系の反成図である。

第4圖は本電機により製造されたグリーンガラス
 いびで及びつの組成図、第5圖は平面図、第6圖
 は正面及びつの組成図である。

- 1 一一 ちやうど
- 2 一一 背腹側面より
- 3 一一 表面側面より
- 7 一一 ちやうど背面側面より
- 8 一一 腹面より
- 9 一一 側面より

1. 今般羅園り屋敷は第2・3部に就いてあるものであり、むづつ本格的な手段では居室の前後平屋により目的を遂行することが出来る。

次に酢酸を加熱へ導出した後、ヒートシール、
酢酸系可溶の塩基の酢酸を加熱により、本品をセツト
を何となく固く醗酵状態を $\text{Ca} \cdot \text{SO}_4$ と置きして一併
化する。

そのうち、併走み手段9へ増進し、互併走み手段9により二併走に併走して併走距離9000mを達成された。20と併走距離9000mを達成した。とを達成された。

を結合させた両側面より距離が $2a \cdot 2b$ の円柱面を、両面切面半径 $1/2$ により覆ふするとともに、両面柱には切面して、ブリーフ形成を得ておなつたを完成する。

口説の道具

本発表は、一方の側面より無容放逐と、おむつを
廃させ、児童一団化し、同室すばに切斷すること
により、アリーフが使い回しておむつを製造するも
のであるから、おむつを廃は従来のおむつ製造ラ
インを転用することができ、また側面より無容放

10. 一切斷乎哉

出 租 人 廣 式 會 社 廣 元
 代 理 人 特 理 士 廣 村 文 雄